Nov. 4, 1941. G. A. BRAUN 2,261,431

OPERATING MECHANISM FOR PRESSING MACHINES

Original Filed Nov. 27, 1935

Fig. 1.

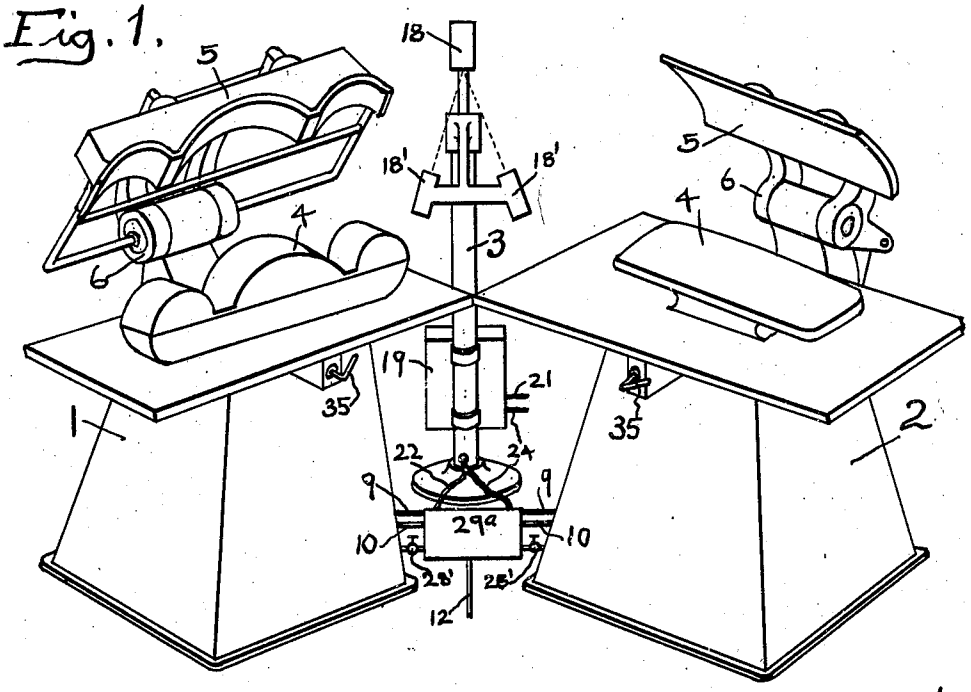
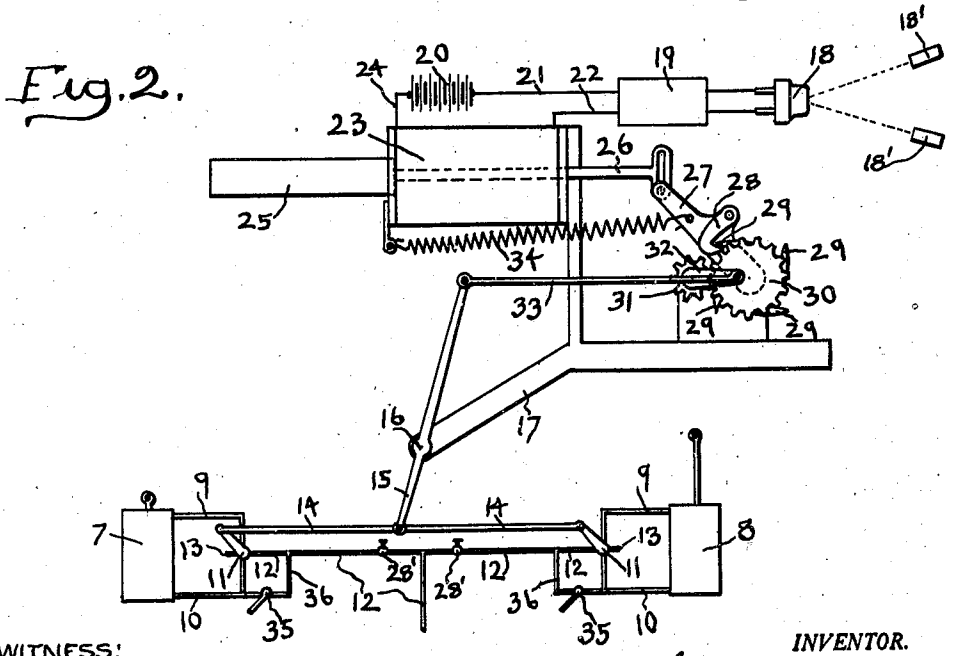


Fig. 2.



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Patented Nov. 4, 1941

2,261,431

UNITED STATES PATENT OFFICE

2,261,431

OPERATING MECHANISM FOR PRESSING MACHINES

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Application November 27, 1935, Serial No. 51,785
Renewed April 29, 1938

18 Claims. (Cl. 38—5)

This invention relates to improvements in operating and control mechanism for garment, laundry or ironing, and other presses, more particularly textile ironing presses. The invention has particular applicability for ironing presses used in so-called tandem relation where one operator handles two or more presses, and this invention renders such press or presses safe in their operation.

In garment or ironing presses, such as are used in laundries, it is often desirable, for the sake of economy and speed, that two presses be located close together and operated by one person. The operator places the work on the lower jaw or padded buck of one press while the other press remains closed and is pressing the work between its pressing jaws, so that the presses are opened and closed alternately, in some instances automatically by causing the closing action of one press to open the other press. Some laundry ironing and garment presses are constructed so that the operator uses both hands to bring the pressing head of the one machine into pressing position and then uses one or both hands to bring the pressing head of the other machine into an up or open position which, and when repeated continuously during a normal working day, consumes considerable time, and in addition tires or fatigues the operator.

By the use of my invention, the operator of the two machines or presses simply moves from one machine to the other without manually actuating any control lever whatever and is thereby relieved of much hand manipulation, thus producing considerably more work with much less effort. Although the invention has its greatest benefits in connection with one operator using two presses, it is understood that benefits are derived when a single press is provided with the control of this invention.

Such ease of operation is accomplished by providing a photocell or light-sensitive element, sometimes called the electric eye, that is, photo electric control, including one or two beams of light arranged between the two presses and directed upon the electric eye and preferably at a height convenient to the operator. In passing from one machine to the other, an operator permits one hand if one light beam is provided, or both hands if there are two beams of light, to interrupt the beam or beams of light and thereby cast a shadow on said electric eye.

For the sake of safety where a single light beam is utilized, this beam is preferably located far enough away from the press or in a position so that the operator cannot endanger herself by reaching between the pressing jaws when obstructing or intercepting the light beam. Suitable mechanism is provided whereby any interruption of the beam or beams of light into the photo electric cell or electric eye will cause a press to open or close, or where two presses are provided in tandem will cause one press head to open, and the other to close. Thus it will be understood that an operator working on tandem presses has only to move from one press or machine to the other in such a manner as to interrupt the beam or beams of light directed into the electric eye to effect the closing of one press and the opening of the other press.

An important object of the invention, therefore, is to control the opening and closing of one or more presses, with safety to the operator, by means of a mechanism utilizing an electric eye or light-sensitive device.

Another object of the invention is to construct a new and novel control mechanism for presses which are adapted to be operated in tandem.

A still further object is to devise a two-hand control for a garment or laundry press which utilizes a photo-electric cell.

Another object is to devise a single two-hand control for the operation of two presses in tandem relation.

Other objects of the invention will be more apparent from the following description. To describe my invention so that others versed in the art to which it pertains can make and use the same, I have illustrated an embodiment or example of the invention on the accompanying drawing forming a part of this specification and in which:

Figure 1 is a perspective view showing two ironing presses arranged adjacent each other and equipped with one form of safety control embodying my invention. The electric eye or photocell for controlling the two presses is shown carried upon a standard located between the two presses.

Figure 2 is a diagrammatic view of the motor means for actuating the presses and the control parts therefor.

Similar reference numerals refer to similar parts throughout the drawing.

Apparel or laundry to be ironed or pressed is usually moist when brought to a press and it is the drying out of the moisture by heat and pressure which gives the smooth finished effect or sheen to an ironed fabric. The pressing operation therefore includes the steps of laying the work on the lower jaw or buck, closing the press, holding the press closed for a period to dry or cure the garment or fabric, then opening the press and removing the ironed work. The press, therefore, is operated intermittently in that the press is closed and then is held closed for an appreciable period before it is opened for removal of the garment or fabric. This intermittent operation necessitates two operations of the

control and motor means in completing one cycle of operation.

In Figure 1 a collar and cuff ironing press 1 is shown at the left, and a bosom press 2 is shown at the right for illustrative purposes, and any two presses are contemplated. A standard 3 is shown between the said two presses upon which the electric eye mechanism is mounted, as will appear more fully hereinafter. Each press is provided with the usual lower jaw or padded buck 4 and an upper jar or movable head 5, with a polished ironing surface, which is pivotally mounted at 6. Suitable mechanism, such as a motor means and operating or leverage connections therefrom to each movable head, is provided usually in the frame of each press to move each head 5 up and down. In one form of ironing press, the motor means uses air under pressure as the motive fluid or power.

In the illustrated embodiment, each motor has a control means for applying motive fluid or power to the motor to operate the same and close the press, for holding the press closed, and for opening the press. There are many ways and means known to the art for operating a motor means for a laundry press, and the invention herein is applicable to any of the known means. Also any suitable control means for controlling the flow of motive fluid is contemplated.

In Figure 2, mechanism for controlling the operation of the motor means is shown and will now be described. The motor means has an air cylinder 7 for operating the left-hand or collar and cuff press, and another motor means which has an air cylinder 8 for operating the right-hand or bosom press. Each motor means or cylinder is provided with an air pipe 9 entering the upper end of same and another pipe 10 entering the lower end thereof. The pipes 9 and 10 near each cylinder connect with the control means 11 for its respective motor means, the control means illustrated being four-way valves which have the air supply pipe 12 connected to them. Each four-way valve 11 also is provided with an exhaust pipe 13 through which air from one end of the cylinder is exhausted when air pressure is admitted to the opposite end of the cylinder.

The control means or valves 11 are operated by intermittently actuated means which, in the tandem operation illustrated, operates both control means. The valves 11 are operated in unison by being connected to a reciprocating rod 14, which rod is in turn connected to one free end of a lever 15 which is oscillated upon a pivot 16 carried by a rigid frame 17. The parts are so arranged that when the levers of valves 11 are in a position to the left as shown, air pressure will pass from pipe 12 through valve 11 at the left, pipe 9, and into the upper end of cylinder 7; and also through valve 11 at the right, pipe 10, and into the lower end of cylinder 8. With the valves in this position, the head 5 on the press 1 is lowered, or the press is closed, and the head 5 on the press 2 is raised, or this press is opened. When the levers of valves 11 are in a position to the right, i. e., reverse from the position shown in the drawing, air pressure will then pass from pipe 12 through valve 11 at the left, pipe 10 into the lower end of the cylinder 7 to raise the head 5 or open the press 1; and also through the valve 11 at the right, pipe 9 into the upper end of cylinder 8, thus lowering the head 5 or closing the press 2. Thus it will be understood that each time the rod 14 reciprocates or the lever 15 oscillates from one side to the other, one press closes and the other opens, i. e., one head 5 goes down and the other goes up.

Means is provided for intermittently actuating the control means or valves 11 by swinging or oscillating the lever 15 from one side to the other when a light beam or beams to an electric eye 18 is interrupted or a shadow falls on the electric eye. Each time a shadow is caused to fall on the electric eye 18, a circuit of which it is a part and other mechanism within the box 19, will operate in accordance with principles known in the photoelectric art to close a switch or relay, thereby causing an electric current to flow from a battery 20, or other source of electric potential, through a wire 21, the switch or relay within box 19, wire 22, coil or solenoid 23 and through wire 24 back to the battery or source of electric potential 20.

When the coil 23 is energized as described above, it will pull a core 25 into the coil 23 and since the solenoid plunger or core is rigid with a rod 26, the slotted end thereof will rotate or oscillate the end of a pivoted arm 27 to the right and hence to a position to the right of that seen in Figure 2. As the arm 27 moves to the right, the weighted pawl 28 engages one of the four teeth 29, which are carried by or connected with a gear 30, to rotate the latter one-quarter of a turn. Gear 30 is in mesh with a smaller gear 31, the gear ratios being selected so that gear 31 will revolve a half turn. The small gear 31 carries an arm 32 which has its outer end pivotally connected to one end of a link 33, the other end of which is pivotally connected to one free end of the lever 15 mounted on the frame pivot 16. When the coil 23 is deenergized, the core 25 with arm 27 is returned to its normal position, as shown in Figure 2, by a coiled spring 34 and the pawl 28 rides over the teeth 29 without rotating the gear 30.

It will be noted, therefore, that each time the light beam or beams to the photocell or electric eye 18 are intercepted, the rod 14 reciprocates to the right or left and actuates the control means or valves 11. Two such operations of the intermittently actuated means are necessary to close and open one press and to open and close the other press when the presses are being used in tandem.

At times it may be desirous to use only one press, in which case either press may be shut off from operating as described above. Hence an air valve 28' is provided in the air supply pipe 12 extending to each press, so that if it is desired to use only the press 1 on the left, valve 28' controlling the air passing to cylinder 8 is closed, and if it is desired to use only press 2 on the right, then air valve 28' controlling the air passing to cylinder 7 is closed. It will be noted that the mechanism shown in Figure 2, including coil 23, frame 17, gears 30 and 31, lever 15 and valves 11, is preferably enclosed in a casing 29a as shown in Figure 1.

Electric eye circuits for controlling a solenoid 23 are known to that art and hence are not illustrated or particularly described herein. Any electric eye or light-sensitive device is contemplated for controlling energization of the solenoid 23 when the light beam or beams to the electric eye 18 is interrupted, and it is immaterial what sort of known circuit is used with the electric eye. It is understood also that where two beams of light are used for a two-hand control, the electric eye and/or its circuit is adjusted so that

the light intensity of one beam of light is too great to cause operation of the press or presses, and hence both beams of light must be intercepted to operate the press or presses.

Provision is made to raise both heads 5 or open both presses at the close of the working day by providing a valve 35 in a by-pass pipe 36 extending from the supply pipe 12 to the lower end of each cylinder 7 and 8. Other means may be provided to leave both presses in open position when the day's work is finished.

Thus it is clear that each time a shadow is caused to fall on the electric eye 18 or the light beam thereto is interrupted, the coil 23 will be energized, the gear 31 will be given a one-half revolution, the lever 15 will be moved from one of its two positions to the other and one press head 5 will be lifted while the other press head 5 will be lowered.

It will be understood that the parts may be radically changed without in the least departing from the scope of my invention. The uppermost purpose of my invention is that the press is closed or opened, or particularly the head of a press is moved from one position to the other, each time a shadow is caused to fall on the electric eye. Of course, in a great many presses the air pressure is only employed to force the head down with extreme force and the head is brought to a raised or open press position by suitable springs. In such case, the shadow cast into the electric eye would simply release the head which is being held down in closed position and the air pressure would be admitted to the motor means of the other press to force its head down. In some instances, if preferred, the same or similar mechanism can be used to operate one press.

This invention is presented to fill a need for improvements in an operating mechanism for pressing machines. It is understood that various modifications in structure, as well as changes in mode of operation, assembly, and manner of use, may and often do occur to those skilled in the art, especially after benefiting from the teachings of an invention. Hence, it will be understood that this disclosure is illustrative of preferred means of embodying the invention in useful form by explaining the construction, operation and advantages thereof.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. A mechanism for controlling the operation of the motor means of a press having two intermittent steps to complete a cycle of operation comprising control means for applying power to the motor to close the press, for holding the press closed and for opening the press, intermittently actuated means connected with the control means and having two positions in one of which the control means is operated to close the press and in the other position the control means is operated to open the press, a light-sensitive device and circuit controlling operation of the intermittently actuated means, and a light source directing a light beam upon the light-sensitive device, interruption of which beam operates the intermittently actuated means from one position to the other position each time the beam is intercepted.

2. A mechanism for controlling the operation of the motor means of a laundry press having two intermittent steps to complete a cycle of operation comprising control means for applying power to the motor to close the press, for holding the press closed and for opening the press; intermittently actuated means connected with the control means and having two positions in one of which the control means is operated to close the press and in the other position the control means is operated to open the press; means connected with the intermittently actuated means to operate the latter including a solenoid, a light-sensitive device and circuit controlling energization of the solenoid, and a light source directing a beam upon the light-sensitive device, interruption of which beam operates the solenoid to operate the intermittently actuated means from one position to the other position each time the beam is interrupted.

3. A mechanism for controlling the operation of the motor means of a press having two intermittent steps to complete a cycle of operation comprising control means for applying power to the motor to close the press, for holding the press closed and for opening the press; intermittent oscillating means including a ratchet wheel, a pawl cooperating therewith, means to return the pawl to its initial position, and a lever connected with the ratchet wheel and the control means so that in one position the control means is operated to close the press and in the other position the control means is operated to open the press, said lever being rotated through half a revolution for each operation of the pawl and ratchet wheel; and means connected with the pawl to reciprocate the same including a solenoid having an armature connected with the pawl, a light-sensitive device and circuit controlling energization of the solenoid, and a light source directing a beam upon the light-sensitive device, interruption of which beam actuates the armature of the solenoid to reciprocate the intermittent oscillating means from one position to the other position each time the beam is interrupted.

4. A garment or laundry press comprising cooperating pressing jaws between which the work is pressed; motor means connected with a pressing jaw to open and close the press; control means for the motor means adapted to be connected with a source of power and having a position where power is applied to the motor means to close the press and a position for opening the press; and means connected with the control means to alternately move the same to closed press position and open press position including a solenoid, a light-sensitive device and circuit controlling energization of the solenoid, and a light source directing a beam upon the light-sensitive device interruption of which beam actuates the solenoid to operate the press to open or closed position.

5. A garment or laundry press comprising cooperating pressing jaws between which the work is pressed, fluid motor means connected with a pressing jaw to open and close the press, valve means for the motor means adapted to be connected with a source of fluid power and having a position where the fluid power is applied to the motor means to close the press and a position where fluid power is applied to open the press, means connected with the valve means to alternately move the same to its position where power is applied to close the press and where power is applied to open the press including a solenoid, a light-sensitive device and circuit controlling energization of the solenoid, and a light source directing a beam upon the light-sensitive device interruption of which beam actuates the sole-

noid to operate the press to open or closed position.

6. A garment or laundry press comprising cooperating pressing jaws between which the work is pressed, motor means connected with a pressing jaw to open and close the press, control means for the motor means adapted to be connected with a source of power and having a position where power is applied to the motor means to close the press and a position for opening the press, means connected with the control means to alternately move the same to closed press position and open press position including a solenoid, a light-sensitive device and a circuit controlling energization of the solenoid, and a pair of light beams directed upon the light-sensitive device so that interruption of both beams by the two hands of the operator is necessary to actuate the solenoid and operate the press to open or closed position.

7. A pair of garment or laundry presses comprising cooperating pressing jaws for each press between which the work is pressed, motor means for each press connected with a pressing jaw to open and close the press, control means for each motor means adapted to be connected with a source of power and having a position where power is applied to the motor means to close its respective press and a position for opening that same press, and means connnected with both control means to alternately move one control means to closed press position and open press position and to alternately move the other control means to open press position and closed press position including a single pair of spaced operator actuated means requiring the two hands of the operator to actuate the motor control means whereby one press is opened and the other closed.

8. A pair of garment or laundry presses comprising cooperating pressing jaws for each press between which the work is pressed, motor means for each press connected with a pressing jaw to open and close the press, control means for each motor means adapted to be connected with a source of power and having a position where power is applied to the motor means to close the press and a position for opening the press, means connected with both control means to move one control means to closed press position and the other control means to open press position and subsequently to move the first control means to open press position and the other control means to closed press position including a light-sensitive device, a circuit controlled by the light-sensitive device and actuating the next aforesaid means, and a pair of light beams directed upon the light-sensitive device so that interruption of both beams by the operator using two hands is necessary to energize the circuit to operate the presses.

9. A pair of garment or laundry presses comprising cooperating pressing jaws for each press between which the work is pressed, motor means for each press connected with a pressing jaw to open and close the press, control means for each motor means adapted to be connected with a source of power and having a position where power is applied to the motor means to close its respective press and a position for opening that same press, means connected with both control means to alternately move one control means to closed press position and open press position and to alternately move the other control means to open press position and closed press position including a solenoid, a light-sensitive device, a circuit controlling energization of the solenoid, and a pair of light beams directed upon the light-sensitive device so that interruption of both beams by the operator using two hands is necessary to actuate the solenoid to operate the presses to open and closed positions.

10. A pair of garment or laundry presses located with an end of one press adjacent an end of the other and with a space therebetween comprising cooperating pressing jaws for each press between which the work is pressed, motor means for each press connected with a pressing jaw to open and close the press, control means for each motor means adapted to be connected with a source of power and having a position where power is applied to the motor means to close the press and a position for opening the press, means connected with both control means to alternately move one control means to closed press position and the other control means to open press position and subsequently the first control means to open press position and the other control means to closed press position including a light-sensitive device and a circuit controlling operation of the next aforesaid means, and at least one light beam located in the space between the presses and being directed upon the light-sensitive device so that interruption of the beam energizes the circuit to operate one press to open or closed position and the other press to closed or open position.

11. A pair of garment or laundry presses located angularly with respect to each other and with a corner of one press adjacent a corner of the other press, thereby forming a space therebetween, comprising cooperating pressing jaws for each press between which the work is pressed, motor means for each press connected with a pressing jaw to open and close the press, control means for each motor means adapted to be connected with a source of power and having a position where power is applied to the motor means to close the press and a position for opening the press, means connected with both control means to alternately move one control means to closed press position and the other control means to open press position and subsequently the first control means to open press position and the other control means to closed press position including a light-sensitive device and a circuit controlling operation of the next aforesaid means, and at least one light beam located in the space between the angularly disposed presses and being directed upon the light-sensitive device so that interruption of the beam energizes the circuit to operate one press to open or closed position and the other press to closed or open position.

12. A pair of garment or laundry presses located with an end of one press adjacent an end of the other and with a space therebetween comprising cooperating pressing jaws for each press between which the work is pressed, motor means for each press connected with a pressing jaw to open and close the press, control means for each motor means adapted to be connected with a source of power and having a position where power is applied to the motor means to close the press and a position for opening the press, means connected with both control means to alternately move one control means to closed press position and the other control means to open press position and subsequently to move the first control means to open press position and the other control means to closed press position, photocell mechanism controlling the operation of the next aforesaid means including a standard located in

the space between the two presses, a light-sensitive device and a circuit therefor carried by the standard, a source of light upon the standard directing at least one light beam upon the light-sensitive device so that interruption of the beam energizes the circuit to operate one press to open or closed position and the other press to closed or open position.

13. A pair of garment or laundry presses located with an end of one press adjacent an end of the other and with a space therebetween comprising cooperating pressing jaws for each press between which the work is pressed, motor means for each press connected with a pressing jaw to open and close the press, motor control means for each motor means adapted to be connected with a source of power and having a position where power is applied to the motor means to close its respective press and a position for opening that same press, means connected with both motor control means to alternately move one control means to closed press position and open press position and to alternately move the other control means to open press position and closed press position, a standard in the space between the two presses, and a single pair of spaced operator control means for both presses carried by the standard and requiring the two hands of the operator to actuate the motor control means whereby one press is opened and the other closed.

14. A pair of garment or laundry presses located with an end of one press adjacent an end of the other and with a space therebetween comprising cooperating pressing jaws for each press between which the work is pressed; motor means for each press connected with a pressing jaw to open and close the press; control means for each motor means adapted to be connected with a source of power and having a position where power is applied to the motor means to close the press and a position for opening the press; means connected with both control means to alternately move one control means to closed press position and the other control means to open press position and subsequently the first control means to open press position and the other control means to closed press position; and photocell mechanism controlling the operation of the next aforesaid means including a standard located in the space between the two presses, a light-sensitive device, a circuit for the light-sensitive device, and a source of light carried by the standard and providing two light beams for controlling both presses and being directed upon the light-sensitive device so that the two hands of the operator are required to interrupt the beams to energize the circuit for the light-sensitive device whereby one press is opened or closed and the other press is closed or opened.

15. A pair of garment or laundry presses located with an end of one press adjacent an end of the other and with a space therebetween comprising cooperating pressing jaws for each press between which the work is pressed; motor means for each press connected with a pressing jaw to open and close the press; control means for each motor means adapted to be connected with a source of power and having a position where power is applied to the motor means to close the press and a position for opening the press; means connected with both control means to alternately move one control means to closed press position and the other control means to open press position and subsequently the first control means to open press position and the other control means to closed press position; and photocell mechanism controlling the operation of the next aforesaid means including a standard located in the space between the two presses and extending well above the presses, a light-sensitive device located at the top of the standard, a circuit for the light-sensitive device, and a source of light providing two light beams emanating from substantially the same horizontal position and carried by the standard below the light-sensitive device and within easy reach of the operator, the light beams being directed upon the light-sensitive device so that interruption of both beams of light by the two hands of the operator energizes the circuit to operate one press to open or closed position and the other press to closed or open position.

16. A photocell control mechanism for the motor means of a garment or laundry press comprising a standard adapted to be located adjacent to and extend well above the press, a light-sensitive device located at the top of the standard, a circuit for the light-sensitive device, a source of light providing two spaced light beams emanating from substantially the same horizontal position and carried by the standard below the light-sensitive device and within easy reach of the operator, the light beams being directed upon the light-sensitive device so that interruption of both beams by the two hands of the operator energizes the circuit to operate the press alternately to closed or open position.

17. A garment or laundry press comprising cooperating pressing jaws between which the work is pressed, motor means connected with a pressing jaw to open and close the press, control means for the motor means adapted to be connected with a source of power and having a position where power is applied to the motor means to close the press and a position for opening the press, means connected with the control means to alternately move the control means to closed press position and to open press position, photocell mechanism controlling the operation of the next aforesaid means including a light-sensitive device located remotely from the press and operator, a circuit for the light sensitive device, a source of light providing two spaced light beams adjacent the press within easy reach of the operator, the light beams being directed upon the light-sensitive device so that the operator is required to use two hands to interrupt both beams which energizes the circuit to open or close the press.

18. A pair of garment or laundry presses comprising cooperating pressing jaws for each press between which the work is pressed, motor means for each press connected with a pressing jaw to open and close the press, control means for each motor means adapted to be connected with a source of power and having a position where power is applied to the motor means to close its respective press and a position for opening that same press, and means connected with both control means to alternately move one control means to closed press position and open press position and to alternately move the other control means to open press position and closed press position including a single operator actuated means serving both presses and located therebetween to actuate both of the motor control means whereby the operator may actuate the operator actuated means as she passes from one press to the other to open one press and close the other.

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